

Government of
Saskatchewan

Annual Report
1989-90

Saskatchewan Science and Technology

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Letters of Transmittal



To the Honourable
Sylvia O. Fedoruk, O.C., S.O.M.
Lieutenant Governor of the
Province of Saskatchewan

Madam:

I have the honour to submit the Annual Report of Science and Technology for the year ending March 31, 1990.

Respectfully submitted,

Grant Schmidt

Grant Schmidt
Minister of Economic Diversification
and Trade



To the Honourable Grant Schmidt
Minister of Economic Diversification
and Trade

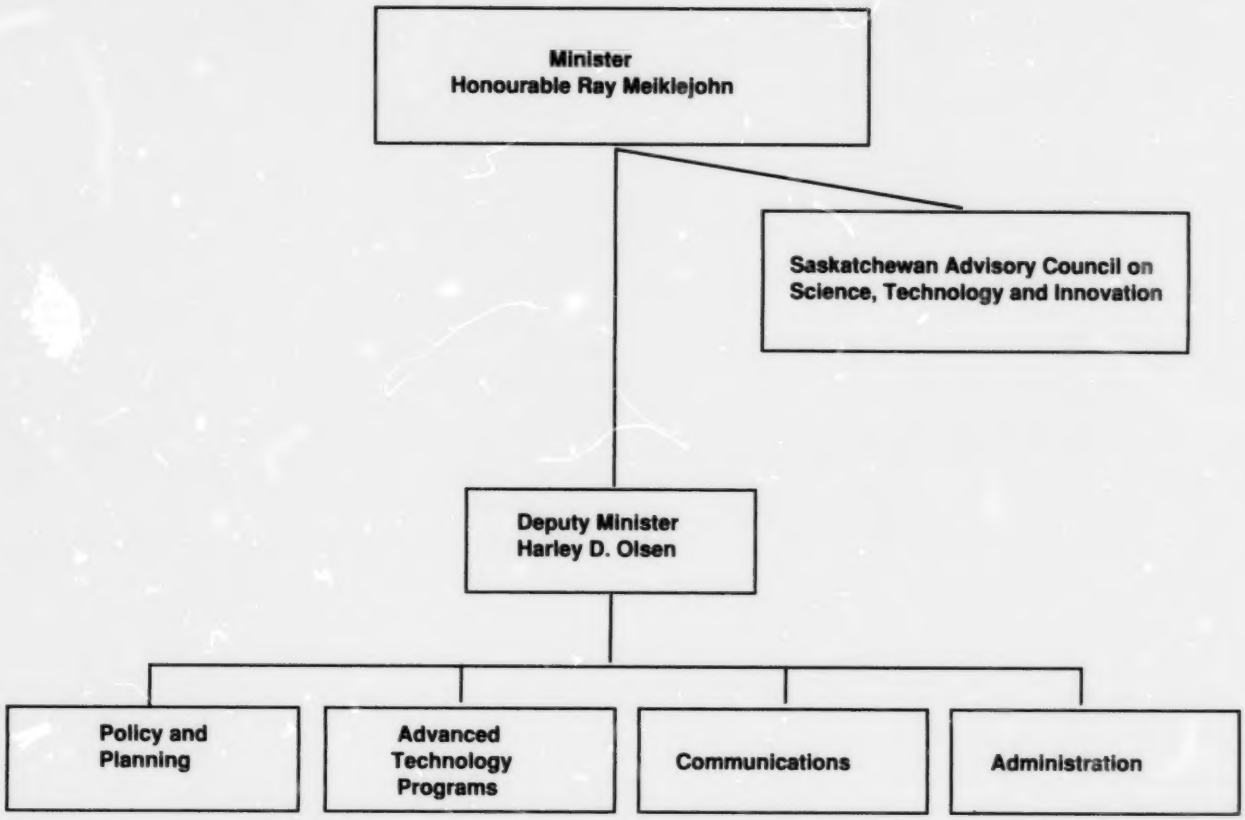
Sir:

I have the honour to submit for your consideration the Annual Report of Saskatchewan Science and Technology for the fiscal year ending March 31, 1990.

Respectfully submitted,

Henry L. Kutarna
Deputy Minister of
Economic Diversification
and Trade

Organization Chart (March 31, 1990)



The Year in Review

The mandate of Saskatchewan Science and Technology was to develop, co-ordinate, apply and promote science and technology activity in the province. The department's specific objectives were to:

- Stimulate development of an industrially-based advanced technology sector;
- Diversify the Saskatchewan economy by developing new products and processes to expand existing markets and establish new ones at home and abroad;
- Assist Saskatchewan small business in acquiring new technologies;
- Support development of a world-class research infrastructure in order to attract new research capabilities and produce spin-off industrial opportunities;
- Co-ordinate the research, science and technology activities of industry, government, universities and public research institutions;
- Support development of a more efficient and diverse resource sector through new product research and development;
- Promote and co-operate in international, federal, and inter-provincial science and technology initiatives;
- Create awareness of educational and employment opportunities in science and technology fields to ensure a future source of trained scientists, technicians and entrepreneurs; and
- Increase public awareness of the importance of science and technology to Saskatchewan's economic and social well-being.

Through a network of government and industry contacts, the department extended and refined its activities to ensure that the province's industry and the wider economy received effective support in an increasingly competitive global environment.

Consultative mechanisms were established to build partnerships between industry, universities, research institutions, and other government organizations.

The Council of Science and Technology Ministers was established in 1987 to co-ordinate a National Science and Technology Policy focusing on the application of science and technology to the economic, social, cultural and regional development of Canada.

In 1989, the council began to develop a National Science and Technology Action Plan to address challenges of the 1990s. The plan will be finalized during 1990-91.

The Western Science and Technology Ministers' Forum was established in 1987 by the four western provinces because of common needs and limited resources. Ongoing work in this forum during the fiscal year included information exchange, joint research and technology/industry development projects, and sharing of research facilities. This collaboration resulted in increased federal science and technology activity for Saskatchewan and Western Canada, including:

- Earth Environment Space Initiative (EESI);
- Western Environmental Technologies Network opportunities; and,
- Canadian Space Program regional industrial benefits.

The Saskatchewan Advisory Council on Science, Technology and Innovation was established in February 1989 to advise the Minister and Cabinet on policies that would strengthen and diversify the Saskatchewan economy through the application of science and technology.

During the fiscal year, it:

- Reviewed Saskatchewan economic development programs to identify policy and program gaps;
- Participated in the Halifax National Advisory Forum;
- Reviewed public awareness and science education programs and developed an awareness theme;
- Developed a position on "The Role of Science and Technology in the Saskatchewan Economy";
- Presented recommendations to the Premier for strengthening Saskatchewan's economy through application of science and technology;
- Consulted with the Ontario Premier's Council to determine steps for the most effective council operation;
- Developed a proposal to conduct a new technology competitiveness baseline study;
- Contributed input to the department's 1990-91 budget; and
- Reviewed Saskatchewan's economic/fiscal position with the Department of Finance, and offered recommendations for increased resource allocation to science and technology initiatives.

On April 1, 1990, the Department of Science and Technology was merged with the Departments of Economic Development and Tourism, Trade and Investment, and Public Participation to form the Department of Economic Diversification and Trade.

Policy and Planning Division

The Policy and Planning Division concentrated on ensuring that Saskatchewan received maximum benefit from money spent on science, technology and innovation by provincial, federal and international governments. It also ensured that government policies and programs responded to the needs of the advanced technology industry.

Strategic initiatives in the field of agricultural biotechnology included continued work with Ag-West Biotech Inc. to develop Saskatchewan's agricultural biotechnology initiatives into a viable commercial sector. Ag-West Biotech Inc. received a five-year $9 million research and development fund from the Province to develop and commercialize agricultural biotechnology initiatives, and to attract investment from the federal government and industry partners. Work was carried out extensively with the National Agricultural Biotechnology Initiative (NABI), a $25 million Western Canada fund to promote commercialization of agricultural biotechnology research in the West.

Accomplishments within the space sector included:

- Expansion of the role of SED Systems Inc. in the $3 billion Canadian Space Program, which is expected to result in approximately $200 million in industrial benefits to the Prairie Region in the 1990s;
- Negotiations between Saskatchewan, British Columbia, Ontario, Quebec, and the Canadian Space Agency on a cost-sharing arrangement for the construction of RADARSAT, Canada's first radar resource monitoring satellite. It is anticipated that $20 million in RADARSAT contracts will be awarded to SED Systems and supporting Saskatchewan companies between 1989 and 1994;
- A study, cost-shared with Industry, Science and Technology Canada, found the establishment of a Canadian Space Control

Centre in Saskatoon to be a feasible proposition. The facility would control and monitor scientific satellites and space platforms in support of national and international space activities. Negotiations with the Canadian Space Agency will proceed in 1990-91; and

- A task force of the western provinces and their leading space companies was established to develop an earth environment space monitoring project for consideration by the Canadian Space Agency. Federal, provincial and industry funding for Phase I of the Earth Environment Space Initiative was approved in February 1990.

In co-operation with Western Economic Diversification, Industry, Science and Technology Canada and the Buy Saskatchewan Agency,the department co-funded a federal procurement opportunities conference in October 1989. The conference identified opportunities and impediments to federal government procurement.

Work continued with the province of British Columbia to secure industrial opportunities for Saskatchewan firms from the proposed $600 million expansion of the University of British Columbia nuclear physics research centre known as TRIUMF/KAON.

The department continued to support activity in the $240 million federal Networks of Centres of Excellence Program to encourage the formation of university/industry teams to conduct research and development. Saskatchewan researchers and companies are involved in six of the fourteen approved networks. This will generate approximately $9 million in federal funding over four years for basic and commercial research.

A Western Technologies Environmental Network was developed with the other Western provinces to review economic-based waste minimization and management. The western provinces also began discussions with the federal government for a cost-shared Environmental Industry Capabilities Study.

Provincially, an Environmental Technology Development Program for the next fiscal year was established by the Departments of Science and Technology and Environment and Public Safety. This program will support research and development leading to the commercialization of technologies that respond to the need for improved environmental monitoring, protection and clean-up.

Policy work was done on the ERDA Agreements, the Goods and Services Tax, the Free Trade Agreement, Bill C-22 pharmaceutical research and development, biotechnology regulation, environmental protection/sustainable economic development, the federal strategy known as InnovAction, and a draft National Science and Technology Action Plan.

In 1989, 141 Saskatchewan students were awarded scholarships under the Canada Scholarship Program. Each student will receive $2,000 annually for four years for a total of $8,000. To date, a total of 226 Saskatchewan students have been awarded scholarships.

Under an agreement with the Extension Division of the University of Saskatchewan, the number of regional science fairs in Saskatchewan was expanded to seven during the fiscal year. The department also provided awards for the best project at each regional science fair in the form of travel assistance to the national science fair.

Twelve Saskatchewan students participated in the 1989 Shad Valley Program, a summer university/work program in science/ entrepreneurship for exceptional Grade 11 and 12 students. The program is administered by the Canadian Centre for Creative Technology (CCCT) in Waterloo. The department co-sponsored five of these students in co-operation with CCCT and industry. 1989 marked the beginning of a three year initiative in support of all components of the innovation to expand Saskatchewan student participation to a level where it is hoped that a Shad Valley program will be established in Saskatchewan.

The department supported both universities in projects that would improve interaction with industry in joint research ventures leading to industrial diversification. The projects included:

- Procedural laboratory requirements, University of Saskatchewan: formal standards certification necessary to attract pharmaceutical industry research to Saskatchewan;
- Database on medical technology, University of Saskatchewan: for distribution to national and international businesses;
- Laboratory study, University of Regina: recommended improvements needed to support industry requirements for research facilities;
- Research policy manual, University of Regina: for use by faculty and staff when entering into collaborative research arrangements;
- Workshops, University of Regina: information for faculty and staff on pursuing grant and contractual research opportunities;
- Compilation of research directories detailing research activities, qualifications and capabilities of faculty and staff; and
- Compilation and distribution of promotional material to industry describing Saskatchewan universities' research capabilities.

Department-supported research activities included:

- Quartz crystal research, University of Saskatchewan: important in the manufacture of fibre optics;
- Purchase of an Area Diffractometer, University of Saskatchewan: to support research in the design of pharmaceuticals;
- Nuclear physics facilities construction research, University of Regina: to study related industrial and research benefits; and
- Trade shows: assistance to universities to attend and market their research capabilities.

Implementation of the Third Plan of Action under the Saskatchewan/Jilin Twinning Agreement with China continued. Specific areas included telecommunications and data switch co-operation, biotechnology, technology exchange in farm machinery, grain storage, wind and solar power, co-operation in livestock infectious disease control, and land reclamation. Discussions began on a Fourth Plan of Action to be finalized in 1990-91.

The Policy and Planning Division exchanged information with Canada's overseas science and technology counsellors as part of an extensive program of information distribution. The division also helped the Saskatoon Board of Education develop a handbook for electronic communications between schools in Saskatchewan and Asia Pacific countries.

The division continued to track research and development (R&D) expenditures by provincial departments, the federal government and other Saskatchewan agencies.

The provincial government spent more than $44 million on science and technology in 1988-89. This expenditure was distributed as follows: 42 per cent in government, 21 per cent in universities, 18 per cent in industry, 14 per cent in the Saskatchewan Research Council, and 5 per cent in other agencies. Expenditures within government included economic and marketing studies, policy research and documents, delivery of research and development programs, and statistical analysis.

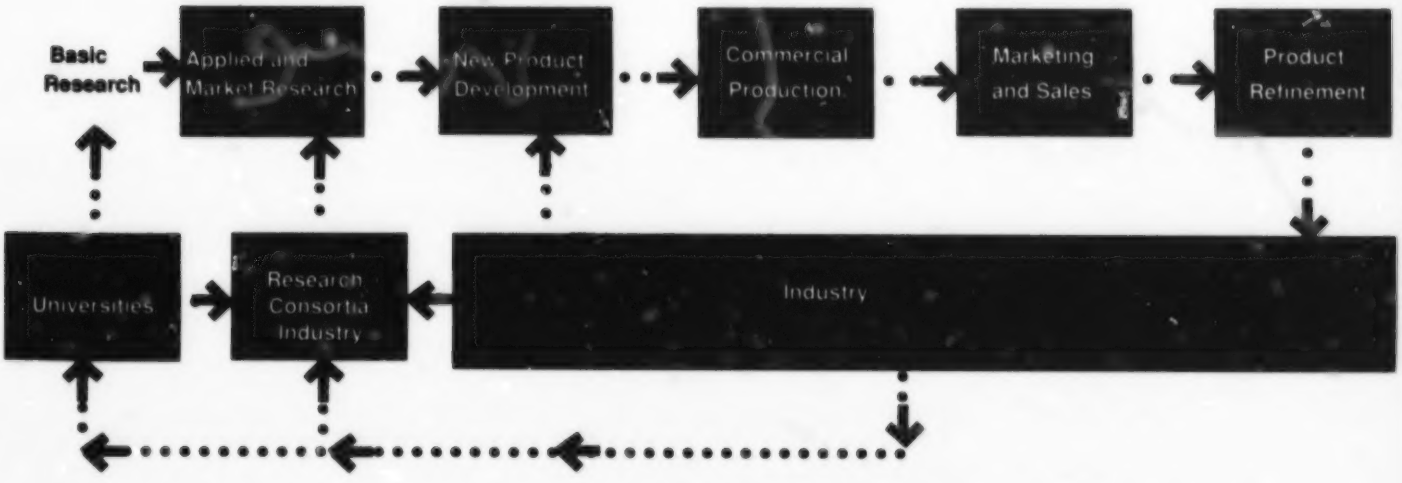
The federal government spent $91 million in Saskatchewan. This represents 2.3 per cent of total expenditures across Canada. Efforts are continuing to encourage the federal government to increase its expenditures to a level which more closely approaches Saskatchewan's national population share.

Advanced Technology Programs Division

The Advanced Technology Programs Division worked with advanced technology companies process. It helped innovators and entrepreneurs develop advanced technology products and processes for sale in domestic and international markets. During the fiscal year, it:

- Risk-shared with innovators by means of financial assistance made available through a seven-part Research and Development Program. The division approved assistance of $6,326,877 for 54 projects conducted by 38 companies and organizations during the fiscal year;
- Administered funding commitments approved prior to the March 31, 1989 expiry of project approval authority for programs under the Canada-Saskatchewan Subsidiary Agreement on Advanced Technology;
- Provided a counselling and advocacy function to help technology innovators develop commercially viable products and businesses;
- Represented the province on the federal/provincial Software Industry Liaison Committee, the organizing committee for Software 90, and on the Board of Directors for Index 90;
- Participated in Tech Ex 89, an international technology exchange forum.
- Worked with industry and the universities to identify opportunities for collaboration and technology commercialization.

The Innovation Process



Communications Division

The mandate of the Communications Division was to support the department's initiatives to strengthen the advanced technology sector, and promote the benefits of science and technology.

During the fiscal year, the division worked on the following projects:

- Software Directory: inventory of the capabilities, products and services of provincial software developers for use in the second edition of the *Saskatchewan Software Directory*, scheduled for release in summer 1990;
- Resource Directory: initiated survey of Saskatchewan advanced technology companies, research organizations and both universities;
- *The Leading Edge*: departmental newsletter;
- Saskatoon From Space: poster depicting satellite data, jointly produced by the department, the Saskatchewan Research Council and the Meewasin Valley Authority;
- Program brochure: information about department funding and support programs;
- National Science and Technology Awareness poster;
- "A Sense of Wonder": a ten-minute award-winning video on science education at the elementary school level, produced in co-operation with British Columbia and the Yukon;
- Saskatchewan Science and Technology Week: used as a model for the first National Science and Technology Week scheduled for October 1990;
- High Tech Entrepreneur Awards Banquet: the first annual banquet was held as part of Science and Technology Week to recognize outstanding contributions to Saskatchewan technology; and
- Global Agricultural Technology Exposition: member of the trade show committee, sponsor and exhibitor.

Staff perpared news releases and feature stories, organized media conferences, and conducted advertising campaigns to support the department's activities.

The division also:

- Served as a liaison with industry/education groups and organizations;
- Participated in trade shows and conferences;
- Provided communications assistance to industry upon request; and
- Served as a resource to the Saskatchewan Advisory Council on Science, Technology and Innovation.

Administration Division

The Administration Divisionprovided a number of services to the department. During the fiscal year, it:

- Co-ordinated staff orientation, training and development, a management retreat, staffing requirements, and a student employment program;
- Provided advice in areas of staff relations, employment fairness, occupational health, the collective agreement, employee benefits, and performance evaluations;
- Represented the department on Public Service Commission committees;
- Supplied advisory services to the Deputy Minister and department divisions on government legislation and regulations;
- Represented the department on the Financial Management Council;
- Prepared and controlled department budgets, financial analyses, forecasts and expenditures;
- Provided records management, mail room and support services to the department; and
- Obtained and maintained furniture, equipment and supplies.

The branch co-ordinated computer use within the department through the following activities:

- Enhanced and maintained the present system;
- Developed new databases;
- Provided in-house desktop publishing training, and created training material for other uses of the system;
- Evaluated external databases for their applicability to department needs; and
- Provided advice to the industrial co-ordinators on technical issues related to software and systems.

Financial Review

Statement of expenditures for the fiscal year ended March 31, 1990

Consolidated Fund Science and Technology

Expenditures by Subvote

Administration	707,763
Technology Development	527,247
Communications	375,657
Payments to Saskatchewan Property Management Corp.	245,870
Members of the Executive Council	36,860
Total	**$1,893,397**

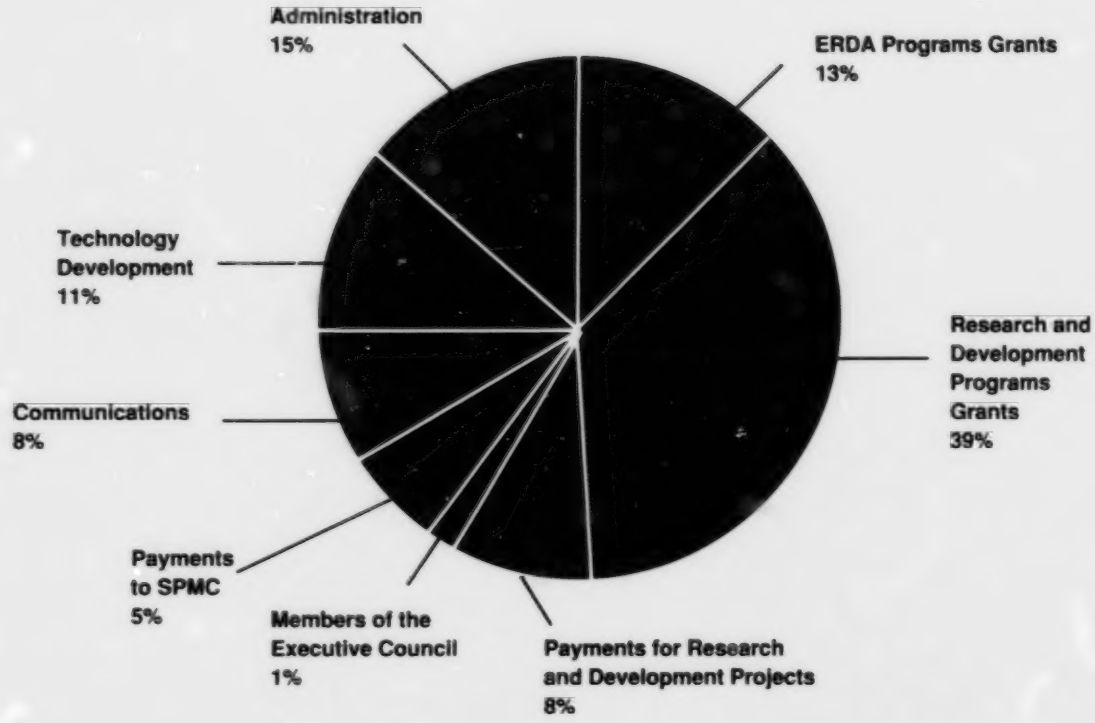
Consolidated Fund Economic Diversification and Investment Fund

Expenditures by Type of Payment

Contractual Services	389,605
Grants and Contributions	2,507,271
Total	**$2,896,846**

Expenditures by Program

Advanced Technology Development Grants	
Research and Development Programs	1,892,526
ERDA Programs	614,715
Payments for Research and Development Projects	389,605
Total	**$2,896,846**



Research and Development Programs
April 1, 1989 - March 31, 1990

Firm	Program	Amount
Ad-West Neon Inc. Saskatoon	Feasibility Studies	$4,300
Ag-Challenge Saskatoon	Information Transfer	$3,500
Agrivision Processing Co. Inc. Rocanville	Industrial Research	$79,400
Asea Brown Boveri Inc. Mississauga, Ontario	Information Transfer	$4,000
AW Dynamometer Services Ltd. Saskatoon	Industrial Research	$10,725
Beck Technology Inc. Regina	Industrial Research	$10,865
C.S.P. Foods Ltd. Saskatoon	Industrial Research	$54,906
Canadian Centre for Creative Technology Waterloo, Ontario	Information Transfer	$25,000
City of Melfort Melfort	Special Studies	$10,000
Digital Systems Group Inc. Saskatoon	Feasibility Studies	$9,433
Display Systems International Inc. Saskatoon	Industrial Research	$149,467
Generation 5 Technologies Regina	Feasibility Studies	$2,500
Global Agricultural Technology Exposition Saskatoon	Information Transfer	$3,800
Government of Canada (Radarsat Project)[1] Ottawa, Ontario	Joint High Technology Research	$3,800,000
Hunters Manufacturing Ltd. North Battleford	Special Studies	$2,500
LC Communications Saskatoon	Feasibility Studies	$2,500
MicroBio Rhizogen Corporation Saskatoon	Industrial Research	$17,420
NSI Nursing Systems Inc. Saskatoon	Industrial Research	$162,400
Noran Tel Inc. Regina	Request for Proposal	$10,000
Oracle Audio Corporation Sherbrooke, Quebec	Industrial Research	$170,000

P.O.S. Pilot Plant Corp. Saskatoon	Research Infrastructure (2)	$100,000
Peat Marwick Saskatoon	Special Stuides and Information Transfer	$41,000
Prairie Plant Systems Inc. Saskatoon	Industrial Research	$32,250
Saskatchewan Science Teachers' Society Regina	Information Transfer	$25,000
Saskatchewan Research Council Saskatoon	Information Transfer (2) and Special Studies	$19,300
Saskatchewan Telecommunications Regina	Joint High Technology Research	$150,000
Saskatoon Chamber of Commerce Saskatoon	Information Transfer	$3,000
SCI-TEC Instruments Inc. Saskatoon	Industrial Research	$97,775
SED Systems Inc. Saskatoon	Request for Proposal (2) Joint High Technology Research, and Special Studies	$189,771
Settler Computer Technologies Inc. Regina	Information Transfer	$3,000
Spectron Technology Corp. Saskatoon	Industrial Research	$470,965
System Ecotechnologies Inc. Saskatoon	Industrial Research	$1,875
Traxis Inc. Saskatoon	Industrial Research	$143,825
University of Regina Regina	Research Infrastructure (2)	$50,000
University of Saskatchewan Saskatoon	Research Infrastructure (2) Capital Equipment (2) and Information Transfer (4)	$289,000
University of Saskatchewan Entrepreneur's Club Saskatoon	Information Transfer (2)	$10,700
Venables Machine Works Saskatoon	Industrial Research	$10,000
Wanuskewin Heritage Park Corp. Saskatoon	Research Infrastructure	$100,000
Total value of contracts signed during the fiscal year[2]		**$6,326,877**
Total work done and paid out to firms[3]		**$1,892,526**

Notes:

1. In September 1989, the Province entered into an Agreement to cost share with the federal government value-added work performed in Saskatchewan related to the design and production of the Radarsat satellite. The Saskatchewan contribution will be up to a maximum of $3.8 million over the next five years.
2. Includes projects extending to 1994-95.
3. Payments include work done under contracts signed in the current fiscal year, as well as contracts signed in prior fiscal years.